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PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| Application of | : | Larry Harris et al. |
| Serial No | : | 09/852,313 |
| Filed | : | May 9, 2001 |
| For | : | Process for Applying Microcapsules to Textile Materials and Products Formed by the Process |
| Examiner | : | Elizabeth M. Cole |
| Art Unit | : | 1771 |

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

**DECLARATION PURSUANT TO 37 CFR § 1.132**

I, Larry Harris, do hereby declare the following:

1. I am employed as Manager of Dyeing and Finishing for Sara Lee Hosiery / Seamless Intimates in Winston-Salem, North Carolina. For the past 25 years, I have worked in the fields of textile chemistry and textile dyeing and finishing. My current responsibilities include research and development related to dyeing of various substrates, technical support for manufacturing production, electronic and visual standards, color development, quality control for dyes and chemicals, and boarding specifications. In conjunction with these responsibilities, and as an inventor, I am very familiar with the research and development leading to the invention(s) disclosed and claimed in the above-referenced patent application.

2. I have reviewed the Official Action dated June 7, 2004, in the above-referenced patent application and the two cited references, European Patent Application No. 0581274 to Kamata et al. and European Patent Application No. 0436729 to Yamato et al.

3. The Official Action states that claims 44-47, 49, 52-55, 57, 60-63, and 65 are rejected under 35 USC § 103(a) as being unpatentable over Kamata et al. in view of Yamato et al. The Official Action states, in particular, that Kamata et al. discloses a textile material which is placed in a bath with microcapsules, and the microcapsules are taken up by the material. The Official Action states that Yamato et al. teaches that a small amount of a binder may be incorporated into the mixture comprising microcapsules which are to be applied to a fabric, such that the binder helps to adhere the microcapsules to the fabric. The Official Action states that it would have been obvious and that one of ordinary skill in the art would have been motivated to employ a binder by the teaching of Yamato et al. to enhance the bonding of the microcapsules and the fabric. (Official Action, pages 2-3.)

4. In previous methods for applying microcapsules to a textile material, such as in the Yamato et al. reference, microcapsules are distributed around the textile material in the presence of a binder. Binders cross-link with microcapsules and cause them to bind to the first surface with which the microcapsule-binder complex comes into contact. As such, microcapsules introduced to textile materials in the presence of a binder tend to adhere to the first surface contacted. This tendency results in microcapsules aggregating predominantly on an outer surface of a textile material, creating a film of microcapsules on that surface. In addition, when microcapsules are introduced to textile materials in the presence of a binder, the microcapsules tend to clump to each other, causing uneven distribution of the microcapsules on the textile material.

5. The present invention employs a process for applying microcapsules to a textile material utilizing a sequence of (1) placing microcapsules in a water bath; (2) contacting the textile material with microcapsules in the water bath without a binder; (3) followed by dispersing the microcapsules around and through the textile material with a dispersant; and (4) then followed by adhering the dispersed microcapsules to the textile material using a binder. (*See* claims 44, 52, and 60, as amended.) This process provides a more thorough and more even

penetration of microcapsules on the surface, as well as into the spaces between fibers, in a textile material. This discovery was unexpected. Such a process of the present invention avoids the tendency associated with previously used methods whereby introducing microcapsules in the presence of a binder causes the microcapsules to adhere only to the first surface of a textile material contacted.

The order of steps in a process of the present invention provides several commercial advantages. The more even penetration of microcapsules on and through a textile material resulting from such a process causes the material to have an excellent "hand" or tactile quality. In addition, the microcapsules are less likely to "flake" away from the material, allowing a fabric and/or garment made by such a process to maintain a desirable appearance without flaking. As a result of such increased distribution and adherence, a process of the present invention advantageously utilizes a much lower volume of microcapsules than in prior methods. Furthermore, a fabric and/or garment made by a process of the present invention has the advantage of maintaining more microcapsules in adherence to the fabric and/or garment for increased delivery of the microcapsule contents over a longer period of time. (*See*, Present Specification, page 3, lines 4-9; page 7, line 17 - page 8, line 12.)

6. At the time of the invention, I inspected under a microscope pantyhose garments having microcapsules introduced to the garments in the presence of a binder (prior art process) and pantyhose having microcapsules applied first without a binder, followed by dispersing with a dispersant, and then adding a binder (present invention process). I compared the quantity of microcapsules adhered to the pantyhose in each group. I found the pantyhose made according to the prior art process to have generally 70-120 microcapsules per microscope field viewing area. The pantyhose made according to a process of the present invention had 175-200 microcapsules per viewing area.

I performed tests in September 2004, to confirm this difference. In a first test group utilizing a prior art process, I prepared a mixture of microcapsules provided by ISF and a Virkler AH binder in a water bath. I placed a 2.5 lb. dye load of nylon pantyhose (approximately three dozen pair of pantyhose) into the bath. In a second test group utilizing a process of the present invention, I utilized the same type of pantyhose, microcapsules, binder, and treatment conditions as with the first test group, with the following exceptions. For the second test group, I placed ISF microcapsules into a water bath (without a binder). Next I added a 2.5 lb. dye load of nylon pantyhose to the water bath to contact the textile material with the microcapsules. I then added to the water bath a dispersant, the Virkler EL-587 dispersant, to disperse the microcapsules around and through the textile material. Finally, I added to the water bath a Virkler AH binder to adhere the dispersed microcapsules to the textile material.

I inspected three separate locations on one pair of treated pantyhose in each test group under a microscope to compare the quantity of microcapsules adhered to the pantyhose in each group. The pantyhose made according to the prior art process had <u>less than 100</u> microcapsules in each of the three microscope field viewing areas. The pantyhose made according to a process of the present invention had <u>150 or more</u> microcapsules in each of the three microscope field viewing areas.

7. These observations and test results demonstrate that a textile material made by the order of steps in a process as in the present invention has a significantly greater distribution and penetration of microcapsules on and through a textile material than a product made by a prior art process, such as a process derived from combining the teachings of the Kamata et al. and Yamoto et al. references. Yamato et al. teaches a process in which *a binder is incorporated into a mixture comprising microcapsules* which is then applied to a fabric. In contrast, the present invention claims a process in which a textile material is *contacted with microcapsules without a binder*, the microcapsules are dispersed around and through the textile material, and *then* the dispersed microcapsules are *adhered* to the textile material with *a binder*. Thus, the present invention claims a product made by a process in which the order of steps is critical. These differences in the two

products are unexpected and provide advantages in the product made according to the present invention. Accordingly, a product of the present invention is made by a process different than the combined Kamata et al./Yamoto et al. process. Consequently, a product made by a process of the present invention is a different, non-obvious product as compared to products made by the combined Kamata et al./Yamoto et al. process. Therefore, a process utilizing the order of steps as in the present invention would not have been obvious over Kamata et al. in view of Yamato et al.

8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issued thereon.

Respectfully submitted,

Date: 12/1/2004

Larry Harris
Sara Lee Corporation

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